

Press briefing

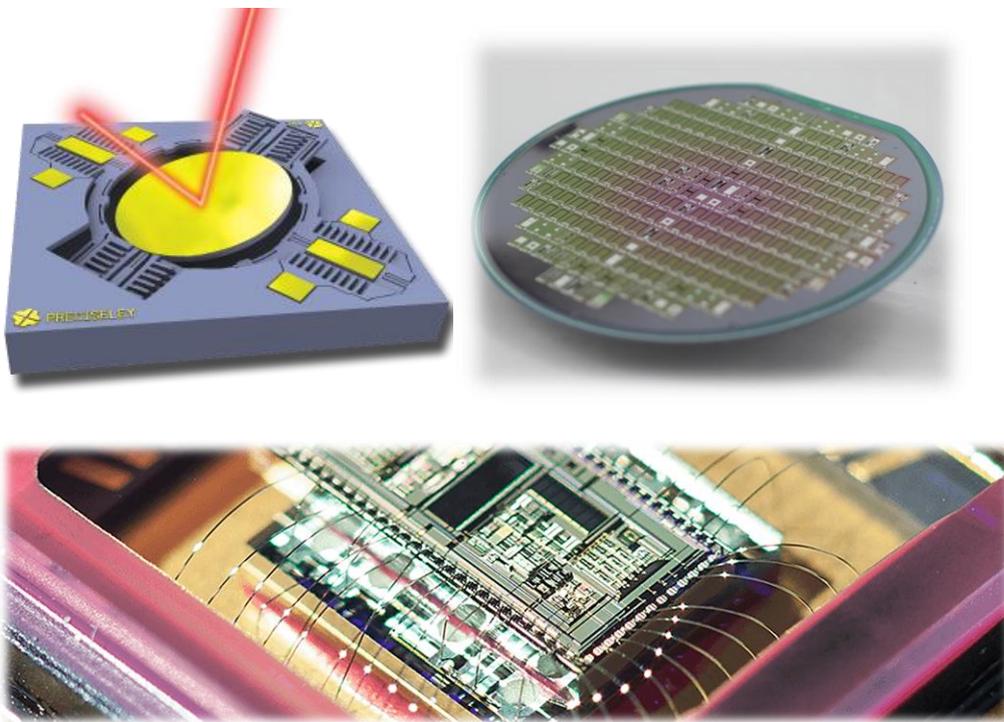
Launch of German-Canadian cooperation to develop innovative applications in medical technology

Saxony-based EDC Electronic Design Chemnitz GmbH, the Fraunhofer Institute for Electronic Nano Systems (ENAS) and Canadian firm Preciseley Microtechnology Corporation have been working together in a collaboration fund since April 2015.

The objective of the joint project is to develop a micro-opto-electro-mechanical system (MOEMS) for optical coherence tomography (OCT). The solution should enable high-resolution, in vivo OCT diagnostics. The only way to increase the precision of the OCT procedure while also achieving the objective of miniaturisation is by using integrated piezoelectric sensors and an application-specific integrated control circuit. This makes it possible to integrate high-precision coherence tomography in an endoscope and obtain non-invasive, three-dimensional images of tissue structures. OCT is a medical imaging procedure used for three-dimensional, in vivo diagnostics in a variety of medical fields, such as ophthalmology. Non-invasive OCT exams can be used to determine the condition of the retina and to detect any potential disorders or diseases. OCT allows doctors to obtain three-dimensional images of tissue structures. The advantages compared to competing procedures are the high resolution and the high level of penetration into the tissue. In contrast to sonography, which is based on an acoustic procedure, OCT is based on optical interferometry (distance measurement).

The three partners in this joint effort are combining their expertise to develop such a system for optical coherence tomography. As part of the project, the Canadian firm Preciseley Microtechnology Corporation is developing an MOEMS that can be used to scan the tissue layers that need to be examined. The Fraunhofer ENAS is integrating a piezoelectric sensor in the MOEMS to increase the accuracy of the system. EDC Electronic Design Chemnitz GmbH is developing an application-specific integrated circuit (ASIC) for the evaluation and control of these symbiotic sensor-actuator systems.

The joint project is made possible by an initiative of the Alberta Ministry of Innovation and Advanced Education (IAE) and the German Federal Ministry for Economic Affairs and Energy (BMWi). Funding in Germany is provided by the Central Innovation Programme for Small and Medium-Sized Enterprises (Zentrales Innovationsprogramm Mittelstand, ZIM), in Alberta by the German-Canadian Centre for Innovation and Research (GCCIR) through Alberta's International Technology Partnership programme (ITP).



Core competencies of the partners:

- Top left: Electrostatic micromirror by Preciseley Microtechnology Corp.
- Top right: Piezoelectric MEMS by the Fraunhofer ENA
- Bottom: Customer-specific ASICs by EDC Electronic Design Chemnitz

EDC Electronic Design Chemnitz GmbH is a medium-sized system provider focused on the development, manufacture and sale of customer- and application-specific discrete and integrated electronic solutions.

"Smart Company - Special Solutions": this slogan sums up EDC's close collaboration with its customers to produce system concepts that are carefully tailored to their specific problems. To this end, EDC develops and tests prototypes and coordinates the necessary steps to achieve series production. EDC primarily designs electronic systems for customers in the areas of industrial sensor technology, industrial automation and drive engineering, as well as in the fields of satellite communication, medical technology and within the automotive industry.

The special strength of the **Fraunhofer Institute for Electronic Nano Systems ENAS** is the development of intelligent technical systems - known as smart integrated systems - for various applications. Fraunhofer ENAS develops systems and components, technologies used to manufacture them, system concepts and system integration technologies and translates them into practical use.

In the field of medical technology, Fraunhofer ENAS addresses the following subjects:

- Special miniaturised sensor implantation, wireless power transfer and bio-compatible structural and joining technology
- Diagnosis and monitoring using highly integrated lab-on-a-chip solutions for point-of-care diagnostics, miniaturised spectrometers and printed batteries for single-use items
- Reliability of systems

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